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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,573	10/15/2003	Edward J. Seppi	VM7036492002	7129
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EXAMINER				
YUN, JURE				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/687,573

Applicant(s)

SEPPI ET AL.

Examiner

Jurie Yun

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6-13, 21-25, 27-34 and 39-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-13, 21-25, 27-34 and 39-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 4/3/08
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/12/08 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 6-13, and 39-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Besson (USPN 6,950,493 B2) in view of Keitaro et al. (JP 05-036368).

4. With respect to claims 1, 39, and 56, Besson discloses an apparatus for use in a radiation procedure, comprising: a radiation filter (Fig. 2 - 150) having a first portion (152) and a second portion (154), the first and the second portions forming a layer for filtering radiation impinging thereon; wherein the first portion is made from a first X-ray filtering material, and the second portion is made from a second X-ray filtering material (column 9, lines 45-60 & column 11, lines 21-28); a structure (112) having a cavity, the

radiation filter (150) in operative association with the structure (via control unit - 110); and a disk located within the cavity, the disk having a first target material and a second target material (column 21, lines 52-57). The first and the second filter factor is applied automatically using a machine (control unit - 110 controls motor - 156). Besson does not specifically disclose the first target material corresponds with the first portion of the radiation filter, and the second target material corresponds with the second portion of the radiation filter, wherein the disk having the first target material and the second target material is rotatable. Keitaro et al. teach a first target material (1) corresponds with a first radiation filter, and a second target material (2) corresponds with a second radiation filter, wherein the disk (3) having the first target material and the second target material is rotatable (abstract & paragraphs 0001-0009). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Besson to employ a first target material corresponding with the first portion of the radiation filter, and a second target material corresponding with the second portion of the radiation filter, to enable generation of a desired quality of radiation, as taught by Keitaro et al.

It is noted that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. See MPEP 2114. In this case, it should be recognized that the wherein clause (wherein the disk...is rotatable) is functional in nature and does not distinguish structurally the instant claim over the prior art. See MPEP 2114 and 2111.04.

5. With respect to claim 2, Besson discloses the first and the second target materials (Fig. 28A, 2702 & 2704) are parts of a radiation source (Fig. 28B, 2802), and the apparatus further comprises the radiation source.
6. With respect to claim 3, Besson discloses a gantry to which the radiation source is secured (column 3, lines 53-54).
7. With respect to claim 6, Besson discloses the radiation source comprises an anode that includes a rare earth element, a platinum group metal, or combination thereof (column 21, lines 52-57).
8. With respect to claim 7, Besson discloses the radiation source comprises a voltage generator (column 13, lines 59-60).
9. With respect to claim 8, Besson discloses a switching element coupled to the voltage generator, the switching element configured to modulate the voltage generated by the voltage generator (column 35, lines 66+).
10. With respect to claim 9, Besson discloses an imager (114) for generating image data in response to radiation that has been filtered by the layer.
11. With respect to claim 10, Besson discloses the imager has a first image element for generating a first image data in response to radiation that has been filtered by the first portion of the radiation filter, and a second image element for generating a second image data in response to radiation that has been filtered by the second portion of the radiation filter (column 4, lines 39-64).
12. With respect to claim 11, Besson discloses a gantry, wherein the imager and the radiation filter are secured to the gantry (column 3, lines 53-54).

13. With respect to claim 12, Besson discloses the imager (114) is coupled to a support structure (128) for supporting an object (116) to which filtered radiation (132) is directed.

14. With respect to claims 13 and 42, Besson discloses either or both of the first and second X-ray filtering materials are selected from the group consisting of aluminum, copper, and molybdenum (column 21, Table 1).

15. With respect to claim 40, Besson discloses the filter 150 is wheel-shaped and rotates.

16. With respect to claim 41, Besson discloses the positioner comprises a motor (156).

17. With respect to claims 43-45, Keitaro et al. disclose the first target material (1) forms a ring configuration; the first target material and the second target material (2) are positioned concentrically relative to each other; and the first target material and the second target material are positioned relative to each other in a side-by-side configuration.

18. With respect to claim 46, Besson discloses an electron gun (Fig. 26, 2604) for sending electrons (2606) towards the first or the second target material (2608).

19. With respect to claims 47-50, Besson discloses an electron deflector for changing a path of the electrons such that the electrons can be selectively aimed towards the first target material or the second target material; wherein the electron deflector comprises an electromagnetic field generator; wherein the electron deflector

comprises a magnetic field generator; wherein the electron deflector physically deflects the electrons (column 45, lines 55+).

20. With respect to claim 51, Besson discloses a gantry to which the structure is secured (column 3, lines 53-54).

21. With respect to claims 52 and 53, Besson discloses the structure is part of a MRI (column 60, line 6) or PET machine (column 59, lines 61-62).

22. With respect to claim 54, Besson discloses the first x-ray filtering material comprises a k-edge filter (column 21, lines 16-20).

23. With respect to claim 55, Besson discloses the first x-ray filtering material has a x-ray transmission window that is above a k-edge, and the second x-ray filtering material has a x-ray transmission window that is below the k-edge (column 32, lines 25-27).

24. Claims 21-25 and 27-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Besson (USPN 6,950,493 B2) in view of Albert (USPN 4,048,496).

25. With respect to claim 21, Besson discloses a method for generating image data, comprising: generating a first x-ray radiation using a target material; applying a first filter factor (Fig. 2 - 152) to the first x-ray radiation to obtain a first filtered radiation; generating a first set of image data in response to the first filtered radiation; generating a second x-ray radiation using a target material; applying a second filter factor (154) to the second x-ray radiation to obtain a second filtered radiation; and generating a second set of image data in response to the second filtered radiation; wherein the first and the

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second filter factor is applied automatically using a machine (control unit - 110 controls motor - 156).

While Besson teaches a dual target configuration (column 21, lines 52-57), Besson does not specifically disclose a first target material and a second target material to produce the first and second x-ray radiation with the corresponding first and second filter factors. Albert discloses a first target material corresponds with a first portion of a radiation filter, and a second target material corresponds with a second portion of the radiation filter (column 7, lines 56-68 & column 8, lines 59-64). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Besson to employ a first target material corresponding with the first filter factor, and a second target material corresponding with the second filter factor, to provide an X-ray source providing for selection of any of a plurality of different wavelength spectra to enhance imaging, as taught by Albert (column 2, lines 30-46).

Besson does not disclose the first target material forms a first ring, the second target material forms a second ring, the first x-ray radiation is generated by aiming electrons towards the first ring, and the second x-ray radiation is generated by deflecting the electrons such that they are aimed towards the second ring. Albert discloses the first target material forms a first ring (the outer ring of targets - 54), the second target material forms a second ring (the inner ring of targets - 56), the first x-ray radiation is generated by aiming electrons towards the first ring, and the second x-ray radiation is generated by deflecting the electrons such that they are aimed towards the second ring (via deflection control - 28). It would have been obvious to one of ordinary

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skill in the art at the time the invention was made to modify Besson to have the first target material form a first ring, the second target material form a second ring, the first x-ray radiation is generated by aiming electrons towards the first ring, and the second x-ray radiation is generated by deflecting the electrons such that they are aimed towards the second ring, because this is a rapid and efficient way to conduct analysis, as taught by Albert.

26. With respect to claims 22 and 23, Besson discloses the first filter factor is applied by placing a first filter into the X-ray radiation, and the second filter factor is applied by placing a second filter into the X-ray radiation (column 9, lines 45-60).

27. With respect to claim 24, Besson discloses the first filter factor has a same filtering characteristic as the second filter factor (column 9, lines 45-60).

28. With respect to claim 25, Besson discloses the first filter factor is different from the second filter factor (column 9, lines 45-60).

29. With respect to claim 27, Besson as modified by Albert discloses the first filter factor and the second filter factor are applied by placing a first filter and a second filter, respectively, into the first and second X-ray radiation (Albert – column 7, lines 56-68 & column 8, lines 59-64).

30. With respect to claim 28, Besson discloses the first filter (Fig. 2, 152) and the second filter (154) are secured to a rotatable structure (filter 150 is wheel-shaped and rotates).

31. With respect to claims 29-33, Besson as modified by Albert discloses the first set and the second set of image data are generated using an imager; collecting the first set

and the second set of image data from the imager; wherein the collection of the first and the second sets of image data is synchronized with positions of the first and the second filters; wherein the first set of image data is generated using a first imager, and the second set of image data is generated using a second imager; and collecting the first set and the second set of image data from the first and the second imagers, respectively (Besson - column 4, lines 39-64).

32. With respect to claim 34, Besson discloses either or both of the first and second filters comprise a material selected from the group consisting of aluminum, copper, and molybdenum (column 21, Table 1).

33. Claims 57-59 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Besson (USPN 6,950,493 B2) in view of Keitaro et al. (JP 05-036368) as applied to claims 1 and 39 above, and further in view of Albert (USPN 4,048,496).

34. With respect to claims 57 and 62, Besson as modified by Keitaro et al. disclose the first target material forms a first ring (Keitaro et al. - 1), the second target material forms a second ring (2), wherein the first and second rings are rotatable relative to an electron source (4 & 5). Besson/Keitaro et al. do not disclose an electron deflector for selectively aiming electrons towards the first ring or the second ring. Albert discloses an electron deflector (28) for selectively aiming electrons towards the first ring (54) or the second ring (56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Besson/Keitaro et al. to have an electron

deflector for selectively aiming electrons towards the first ring or the second ring, because this is a rapid and efficient way to conduct analysis, as taught by Albert.

35. With respect to claim 58, Keitaro et al. disclose a positioner (the anode is disclosed to be a rotation anode) for rotating the first ring, wherein the positioner is configured to rotate the first ring while the electrons are aimed towards the first ring.

36. With respect to claims 59 and 64, Keitaro et al. disclose the first target material (1) has an arc shape to form part of the first ring.

37. With respect to claim 63, Keitaro et al. disclose a motor for rotating the first ring, wherein the motor is configured to rotate the first ring while the electrons are aimed towards the first ring (paragraphs 0001+).

38. Claims 60 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Besson (USPN 6,950,493 B2) in view of Albert (USPN 4,048,496) as applied to claim 21 above, and further in view of Keitaro et al. (JP 05-036368).

39. With respect to claim 60, Besson in view of Albert does not disclose rotating the first ring while the electrons are aimed towards the first ring; and rotating the second ring while the electrons are aimed towards the second ring. Keitaro et al. disclose this (paragraphs 0001+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Besson/Albert to rotate the first ring while the electrons are aimed towards the first ring, and rotate the second ring while the electrons are aimed towards the second ring, to prevent the targets from overheating.

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40. With respect to claim 61, Albert discloses the first target material (54) that has an arc shape to form part of the first ring.

Response to Arguments

41. Applicant's arguments filed 6/12/08 have been fully considered but they are not persuasive. Applicants argue:

"In particular, Keitaro merely discloses generating x-ray with a desired quality by providing two different focal planes 1, 2 on base material 3 (figures 1-3). There is nothing in Keitaro that discloses or suggests a first target material corresponds with a first radiation filter/filter portion, and a second target material corresponds with a second radiation filter/filter portion. Since both Besson and Keitaro do not disclose or suggest the above limitations, they cannot be combined to form the subject matter of claim 1. For at least the foregoing reasons, claim 1 and its dependent claims are believed allowable over Besson, Keitaro, and their combination."

The Examiner respectfully disagrees. Keitaro et al. disclose (abstract):

"The X-ray having the desired ray quality can be obtained by providing a filter corresponding to each cathode and the material of the focus surfaces."

This is a direct teaching of a first target material (1) corresponding with a first radiation filter/filter portion (filter provided for cathode 4), and a second target material (2) corresponding with a second radiation filter/filter portion (filter provided for cathode 5). Thus, this argument is not persuasive.

Applicants also argue there is nothing in Keitaro that teaches corresponding a first target material with a first radiation filter / filter portion and corresponding a second target material with a second radiation filter / filter portion as a way to generate a desired quality of radiation. Thus, Keitaro cannot be used to provide the alleged motivation for the above limitations. The Examiner respectfully disagrees. Keitaro et al.

teach in paragraph 0001 that the invention relates to a rotating anode X-ray tube that emits two or more kinds of quality of radiation. In the abstract, Keitaro et al. disclose the purpose of the invention to be to generate X-ray having a desired ray quality by providing multiple different ring-shape focus surfaces on a target basic material. Also disclosed, as discussed above, is providing a filter for each cathode which each cathode corresponds to a different target. Thus, this argument is not persuasive.

Applicants also argue that claim 21 recites that the first target material forms a first ring, the second target material forms a second ring, the first x-ray radiation is generated by aiming electrons towards the first ring, and the second x-ray radiation is generated by deflecting the electrons such that they are aimed towards the second ring. Besson does not disclose or suggest these limitations. Albert also does not disclose or suggest the above limitations, and therefore, fails to make up the deficiencies present in Besson. For at least the foregoing reasons, claim 21 and its dependent claims are believed allowable over Besson, Albert, and their combination.

The Examiner respectfully disagrees. Albert discloses the first target material forms a first ring (the outer ring of targets - 54), the second target material forms a second ring (the inner ring of targets - 56), the first x-ray radiation is generated by aiming electrons towards the first ring, and the second x-ray radiation is generated by deflecting the electrons such that they are aimed towards the second ring (via deflection control - 28). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Besson to have the first target material form a first ring, the second target material form a second ring, the first x-ray radiation is generated

by aiming electrons towards the first ring, and the second x-ray radiation is generated by deflecting the electrons such that they are aimed towards the second ring, because this is a rapid and efficient way to conduct analysis, as taught by Albert. Thus, this argument is not persuasive.

Conclusion

42. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jurie Yun whose telephone number is 571 272-2497. The examiner can normally be reached on Monday-Friday 8:30-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jurie Yun/
Primary Examiner, Art Unit 2882

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